

CLAIMS

What is claimed is:

- 1 1. An ejector comprising:
2 an ejector handle capable of being rotationally coupled with a blade, the ejector handle
3 movable between a first position wherein the blade is secured in a rack and a
4 second position wherein the ejector handle can be removed from the rack;
5 a release mechanism coupled with the ejector handle, the release mechanism to secure the
6 ejector handle in the first position and, upon actuation, to allow movement of the
7 ejector handle toward the second position; and
8 a lock mechanism disposed in the ejector handle and movable between a locked position
9 and an unlocked position, wherein the lock mechanism, when in the locked
10 position, engages the release mechanism to prevent actuation of the release
11 mechanism.
- 1 2. The ejector of claim 1, further comprising a base capable of being attached
2 to the blade, wherein the ejector handle is rotationally coupled with the base.

1 3. The ejector of claim 1, wherein the lock mechanism comprises:
2 a cylindrical body disposed within a cylindrical hole in the ejector handle, the cylindrical
3 body rotatable between the locked and unlocked positions; and
4 a slot disposed proximate an end of the cylindrical body and oriented parallel to an axis
5 of the cylindrical body, the slot sized and oriented to receive a key disposed on
6 the lock mechanism;
7 wherein the slot can receive the key upon actuation of the release mechanism.

1 4. The ejector of claim 3, further comprising:
2 an indicator element disposed at an opposing end of the cylindrical body;
3 a first registration feature disposed on the ejector handle proximate a periphery of the
4 cylindrical hole, wherein the first registration feature indicates, when the indicator
5 element of the lock mechanism is aligned therewith, that the lock mechanism is in
6 the locked position; and
7 a second registration feature disposed on the ejector handle proximate the periphery of
8 the cylindrical hole, wherein the second registration feature indicates, when the
9 indicator element of the lock mechanism is aligned therewith, that the lock
10 mechanism is in the unlocked position.

1 5. The ejector of claim 4, further comprising a drive element disposed on the
2 opposing end of the cylindrical body, the drive element allowing a user to rotate the
3 cylindrical body between the locked and unlocked positions.

1 6. The ejector of claim 3, further comprising a biasing element disposed in
2 the cavity adjacent the cylindrical hole, the biasing element exerting a force against the
3 cylindrical body of the lock mechanism.

1 7. The ejector of claim 6, wherein the biasing element comprises a
2 cylindrical rod resting within a groove extending about a circumference of the cylindrical
3 body of the lock mechanism.

1 8. The ejector of claim 7, wherein the groove includes a contoured bottom
2 surface and the interaction between the biasing element and the contoured surface
3 provides tactile feedback to a user actuating the lock mechanism.

1 9. The ejector of claim 2, wherein the ejector handle comprises:
2 a body rotationally coupled with the base about an axis of rotation, the body including a
3 first lever arm extending from the axis of rotation and a second lever arm
4 extending from the axis of rotation;
5 a cavity formed in the body, the cavity able to receive the release mechanism; and
6 an engagement element disposed on the second lever arm the engagement element to
7 interface with a mating retaining element disposed on the rack while the ejector
8 handle is moved between the first and second positions.

1 10. The ejector of claim 9, wherein the ejector handle is movable between the
2 first and second positions by exerting a force on the first lever arm.

1 11. The ejector of claim 10, wherein the first lever arm has a length greater
2 than a length of the second lever arm.

1 12. The ejector of claim 11, wherein the first lever arm and the second lever
2 arm are separated by an angle of approximately ninety degrees.

1 13. The ejector of claim 9, wherein the mating retaining element forms part of
2 a hook body that is attached to the rack.

1 14. The ejector of claim 13, wherein the engagement element interacts with
2 the mating retaining element to secure the blade in the rack when the ejector handle is at
3 the first position.

1 15. The ejector of claim 14, wherein the engagement element interacts with
2 the mating retaining element to exert an extraction force on the blade when the ejector
3 handle is moved from the first position to the second position.

1 16. The ejector of claim 15, wherein the engagement element interacts with
2 the mating retaining element to exert an insertion force on the blade when the ejector
3 handle is moved from the second position to the first position.

1 17. The ejector of claim 1, wherein the release mechanism is further able to
2 secure the ejector handle in the second position.

1 18. The ejector of claim 2, wherein the release mechanism comprises:
2 a body rotationally coupled with the ejector handle about an axis of rotation, the body
3 including a first lever arm extending from the axis of rotation and a second lever
4 arm extending from the axis of rotation, the body movable between an initial
5 position and a depressed position; and
6 a catch element disposed on the second lever arm, the catch element for engaging a
7 corresponding notch on the base when the body is at the initial position, the
8 interaction between the catch element and the notch preventing movement of the
9 ejector handle;
10 wherein the release mechanism is actuated by applying a force to the first lever arm to
11 move the body from the initial position to the depressed position, the catch
12 element disengaging the notch when the body is at the depressed position.

1 19. The ejector of claim 18, wherein the catch element engages a secondary
2 notch on the base when the body is moved to the depressed position, the interaction
3 between the catch element and the secondary notch holding the body at the depressed
4 position.

1 20. The ejector of claim 1, further comprising a hook, the hook attachable to
2 the rack, the hook including a retaining element for interacting with a mating engagement
3 element on the ejector handle to secure the blade in the rack when the ejector handle is at
4 the first position.

1 21. The ejector of claim 20, wherein the engagement element interacts with
2 the mating retaining element to exert an extraction force on the blade when the ejector
3 handle is moved from the first position to the second position, and wherein the
4 engagement element interacts with the mating retaining element to exert an insertion
5 force on the blade when the ejector handle is moved from the second position to the first
6 position.

1 22. The ejector of claim 1, further comprising a compression spring disposed
2 between the release mechanism and the ejector handle, the compression spring to bias the
3 release mechanism toward a position in which the release mechanism maintains the
4 ejector handle in the first position.

1 23. The ejector of claim 2, wherein the base, ejector handle, release
2 mechanism, and lock mechanism are each formed from a molded plastic.

1 24. The ejector of claim 23, wherein the base, ejector handle, release
2 mechanism, and lock mechanism are assembled together using a snap-fit process.

1 25. An apparatus comprising:
2 a blade, wherein the blade can be disposed in a rack; and
3 an ejector assembly coupled with the blade, the ejector assembly including
4 an ejector handle rotationally coupled with the blade, the ejector handle
5 movable between a first position wherein the blade is secured in
6 the rack and a second position wherein the ejector handle can be
7 removed from the rack,
8 a release mechanism coupled with the ejector handle, the release
9 mechanism to secure the ejector handle in the first position and,
10 upon actuation, to allow movement of the ejector handle toward
11 the second position, and
12 a lock mechanism disposed in the ejector handle and movable between a
13 locked position and an unlocked position, wherein the lock
14 mechanism, when in the locked position, engages the release
15 mechanism to prevent actuation of the release mechanism.

1 26. The apparatus of claim 25, further comprising a base attached to the blade,
2 wherein the ejector handle is rotationally coupled with the base.

1 27. The apparatus of claim 25, wherein the lock mechanism comprises:
2 a cylindrical body disposed within a cylindrical hole in the ejector handle, the cylindrical
3 body rotatable between the locked and unlocked positions; and
4 a slot disposed proximate an end of the cylindrical body and oriented parallel to an axis
5 of the cylindrical body, the slot sized and oriented to receive a key disposed on
6 the lock mechanism;
7 wherein the slot can receive the key upon actuation of the release mechanism.

1 28. The apparatus of claim 27, further comprising:
2 an indicator element disposed at an opposing end of the cylindrical body;
3 a first registration feature disposed on the ejector handle proximate a periphery of the
4 cylindrical hole, wherein the first registration feature indicates, when the indicator
5 element of the lock mechanism is aligned therewith, that the lock mechanism is in
6 the locked position; and
7 a second registration feature disposed on the ejector handle proximate the periphery of
8 the cylindrical hole, wherein the second registration feature indicates, when the
9 indicator element of the lock mechanism is aligned therewith, that the lock
10 mechanism is in the unlocked position.

1 29. The apparatus of claim 28, further comprising a drive element disposed on
2 the opposing end of the cylindrical body, the drive element allowing a user to rotate the
3 cylindrical body between the locked and unlocked positions.

1 30. The apparatus of claim 27, further comprising a biasing element disposed
2 in the cavity adjacent the cylindrical hole, the biasing element exerting a force against the
3 cylindrical body of the lock mechanism.

1 31. The apparatus of claim 30, wherein the biasing element comprises a
2 cylindrical rod resting within a groove extending about a circumference of the cylindrical
3 body of the lock mechanism.

1 32. The apparatus of claim 31, wherein the groove includes a contoured
2 bottom surface and the interaction between the biasing element and the contoured surface
3 provides tactile feedback to a user actuating the lock mechanism.

1 33. The apparatus of claim 26, wherein the ejector handle comprises:
2 a body rotationally coupled with the base about an axis of rotation, the body including a
3 first lever arm extending from the axis of rotation and a second lever arm
4 extending from the axis of rotation;
5 a cavity formed in the body, the cavity able to receive the release mechanism; and
6 an engagement element disposed on the second lever arm the engagement element to
7 interface with a mating retaining element disposed on the rack while the ejector
8 handle is moved between the first and second positions.

1 34. The apparatus of claim 33, wherein the ejector handle is movable between
2 the first and second positions by exerting a force on the first lever arm.

1 35. The apparatus of claim 34, wherein the first lever arm has a length greater
2 than a length of the second lever arm.

1 36. The apparatus of claim 35, wherein the first lever arm and the second lever
2 arm are separated by an angle of approximately ninety degrees.

1 37. The apparatus of claim 33, wherein the mating retaining element forms
2 part of a hook body that is attached to the rack.

1 38. The apparatus of claim 37, wherein the engagement element interacts with
2 the mating retaining element to secure the blade in the rack when the ejector handle is at
3 the first position.

1 39. The apparatus of claim 38, wherein the engagement element interacts with
2 the mating retaining element to exert an extraction force on the blade when the ejector
3 handle is moved from the first position to the second position.

1 40. The apparatus of claim 39, wherein the engagement element interacts with
2 the mating retaining element to exert an insertion force on the blade when the ejector
3 handle is moved from the second position to the first position.

1 41. The apparatus of claim 25, wherein the release mechanism is further able
2 to secure the ejector handle in the second position.

1 42. The apparatus of claim 26, wherein the release mechanism comprises:
2 a body rotationally coupled with the ejector handle about an axis of rotation, the body
3 including a first lever arm extending from the axis of rotation and a second lever
4 arm extending from the axis of rotation, the body movable between an initial
5 position and a depressed position; and
6 a catch element disposed on the second lever arm, the catch element for engaging a
7 corresponding notch on the base when the body is at the initial position, the
8 interaction between the catch element and the notch preventing movement of the
9 ejector handle;
10 wherein the release mechanism is actuated by applying a force to the first lever arm to
11 move the body from the initial position to the depressed position, the catch
12 element disengaging the notch when the body is at the depressed position.

1 43. The apparatus of claim 42, wherein the catch element engages a secondary
2 notch on the base when the body is moved to the depressed position, the interaction
3 between the catch element and the secondary notch holding the body at the depressed
4 position.

1 44. The apparatus of claim 25, further comprising a hook, the hook attachable
2 to the rack, the hook including a retaining element for interacting with a mating
3 engagement element on the ejector handle to secure the blade in the rack when the ejector
4 handle is at the first position.

1 45. The apparatus of claim 44, wherein the engagement element interacts with
2 the mating retaining element to exert an extraction force on the blade when the ejector
3 handle is moved from the first position to the second position, and wherein the
4 engagement element interacts with the mating retaining element to exert an insertion
5 force on the blade when the ejector handle is moved from the second position to the first
6 position.

1 46. The apparatus of claim 25, further comprising a compression spring
2 disposed between the release mechanism and the ejector handle, the compression spring
3 to bias the release mechanism toward a position in which the release mechanism
4 maintains the ejector handle in the first position.

1 47. An ejector comprising:
2 means for ejecting a blade from a rack, the ejecting means movable between a first
3 position wherein the blade is secured in the rack and a second position wherein
4 the ejector handle can be removed from the rack;
5 means for releasing the ejecting means, the releasing means to secure the ejecting means
6 in the first position and, upon actuation, to allow movement of the ejecting means
7 toward the second position; and
8 means for locking the releasing means, the locking means movable between a locked
9 position and an unlocked position, wherein the locking means prevents actuation
10 of the release mechanism when in the locked position.

1 48. The ejector of claim 47, further comprising means for biasing the releasing
2 means toward a position in which the releasing means maintains the ejecting means in the
3 first position.

1 49. The ejector of claim 47, wherein the releasing means is further able to
2 secure the ejecting means in the second position.

1 50. The ejector of claim 47, further comprising means for providing a visual
2 indication of a status of the locking means.

1 51. The ejector of claim 50, further comprising means for providing tactile
2 feedback to a user indicative of a position of the locking means.

1 52. The ejector of claim 47, wherein the ejecting means including means for
2 providing a mechanical advantage.